

CLAIMS

1. Method for producing a matrix comprising at least one ligand fixed by electrochemical route to a conductive carrier or to conductive zones of a carrier, in which at least one element is used able to dispense  
5 the ligand(s) coupled to an electropolymerisable monomer as electrode to carry out electrically assisted synthesis of a polymer carrying the ligand(s) on the conductive carrier or on the conductive zones of the carrier.

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2. Method according to claim 1, in which said element is made up of a reservoir containing the ligand coupled to electropolymerisable monomer and having a conductive part.

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3. Method according to claim 2, in which the reservoir is provided with ligand insertion and evacuation means.

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4. Method according to claim 1, in which said element is made up of an electrode in wire or needle form, charged externally with ligand coupled to the electropolymerisable monomer, the contact between the electrode and the conductive carrier or a conductive  
25 zone of the carrier being assured during the fixing operation by means of a drop of ligand withheld by the electrode.

5. Method according to any of claims 1 to 4, in which identical or different ligands are fixed simultaneously or successively on different conductive sites of the carrier by using several elements  
5 respectively dispensing identical or different ligands.

6. Method according to claim 5, in which at least two of the elements are grouped together to form a print head.

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7. Method according to any of claims 1 to 4, in which at least two different ligands are successively fixed to different sites of the carrier using a single element and by changing at least once the ligand  
15 dispensed by this element.

8. Method according to any of claims 1 to 4, in which the conductive zones are formed of zones of conductive material arranged on an insulating carrier.

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9. Method according to claim 8, in which the zones of conductive material are electrically interconnected.

10. Method according to claim 8, in which the  
25 zones of conductive material are electrically addressable either separately or in groups so that they can be activated separately.

11. Method according to any of claims 8 to 10, in  
30 which the conductive material is chosen from the group

made up of gold, silver, platinum, indium and tin oxide (ITO), carbon and conductive organic polymers.

12. Method according to claim 1, in which each  
5 element dispenses a solution of ligand containing the ligand coupled to an electropolymerisable monomer, the electropolymerisable monomer and optionally a doping agent.

10 13. Method according to claim 1 or 12, in which the electropolymerisable monomer is pyrrole.

14. Method according to claim 1 or 13, in which  
15 fixing of the ligand is obtained by electro-copolymerisation of the monomer and of the ligand coupled to the monomer.

15. Method according to any of claims 1 to 14, in  
20 which the ligand is a nucleotide, an oligonucleotide, an amino acid or a peptide.

16. Device for producing a matrix of ligands on a  
conductive carrier or on conductive zones of a carrier,  
comprising:

25 - at least one ligand dispensing means (1) provided with a conductive part (3),

- means for connecting firstly the conductive  
carrier (7) or conductive zones (13) of the carrier,  
and secondly the conductive part (3) of the dispensing  
30 means to an electric generator, and

- means for positioning and/or moving the carrier and/or the dispenser means relative to one another and to place them in contact such as to carry out several ligand deposits on the carrier at different sites.

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17. Device according to claim 16, in which said dispensing means comprises a reservoir (1) containing the ligand and at least one electrode (3, 5) arranged in said reservoir and forming the conductive part of  
10 said means.

18. Device according to claim 17, which comprises several ligand dispensing means assembled in the form of a print head.

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19. Device for producing a matrix of ligands on a conductive carrier or on conductive zones of a carrier, comprising:

- an electrode (15) in wire or needle form able to  
20 be charged externally with said ligand,

- means for connecting firstly the conductive carrier (7) or conductive zones (13) of the carrier, and secondly the electrode (15) to an electric generator, and

25 - means for positioning and/or moving the carrier and/or electrode (15) relative to one another such as to carry out several ligand deposits on the carrier at different sites.

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